

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

| | |
|--|---|
| Date of mailing (day/month/year) 22 June 2001 (22.06.01) | |
| International application No. PCT/US99/22568 | Applicant's or agent's file reference DN1999200PCT |
| International filing date (day/month/year) 30 September 1999 (30.09.99) | Priority date (day/month/year) |
| Applicant KOEUNE, Jean-Marie, Jules, Joseph | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
15 February 2001 (15.02.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|--------------------------------------|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer Antonia Muller |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

PATENT COOPERATION TREATY

RECEIVED

JAN 24 2002

GOODYEAR PATENT
& TRADEMARK DEPT.

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

COHN, HOWARD M.
The Goodyear Tire and Rubber Comp.
c/o Robert W. Brown-Dept 823
1144 East Market Street
Akron, Ohio 44309-3531
ETATS-UNIS D'AMERIQUE

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

Date of mailing
(day/month/year) 11.01.2002

Applicant's or agent's file reference
DN1999200PCT

IMPORTANT NOTIFICATION

International application No.
PCT/US99/22568

International filing date (day/month/year)
30/09/1999

Priority date (day/month/year)
30/09/1999

Applicant

THE GOODYEAR TIRE & RUBBER COMPANY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

BON, L

Tel. +49 89 2399-2961




JB

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | | |
|--|--|---|--|
| Applicant's or agent's file reference DN1999200PCT | | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/US99/22568 | International filing date (day/month/year) 30/09/1999 | Priority date (day/month/year) 30/09/1999 | |
| International Patent Classification (IPC) or national classification and IPC B60C15/05 | | | |
| Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al. | | | |
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 5 sheets.</p> | | | |
| <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application | | | |
| Date of submission of the demand 15/02/2001 | | Date of completion of this report 11.01.2002 | |
| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | | Authorized officer Buergo, J Telephone No. +49 89 2399 8884 | |



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/22568

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

| | | |
|--------|---------------------|------------|
| 1,3-10 | as originally filed | |
| 2,2A | with telefax of | 05/11/2001 |

Claims, No.:

| | | |
|------|-----------------|------------|
| 1-16 | with telefax of | 05/11/2001 |
|------|-----------------|------------|

Drawings, sheets:

| | |
|---------|---------------------|
| 1/3-3/3 | as originally filed |
|---------|---------------------|

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US99/22568

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|------|--------|---------------|
| Novelty (N) | Yes: | Claims | 3-6,8,10,11 |
| | No: | Claims | 1,2,7,9,12-16 |
| Inventive step (IS) | Yes: | Claims | |
| | No: | Claims | 3-6,8,10,11 |
| Industrial applicability (IA) | Yes: | Claims | 1-16 |
| | No: | Claims | |

2. Citations and explanations
see separate sheet

V. Reasoned statement

2. Citations and explanations

- 2.1 Document WO95/23073 (D1), which is considered to represent the most relevant state of the art, discloses (cf. Fig. 2) a pneumatic tire having a tread, a pair of sidewalls, a pair of bead regions **B**, one ply **1** anchored in each bead region **B**, the pair of bead regions **B** each including an inextensible annular bead core **2** and an elastomeric element **3** disposed adjacent to each bead core **2**, whereby:
- the elastomeric element is disposed axially outwardly from the bead core relative to the equatorial plane of the tire (cf. page 8, 2nd paragraph); and
 - the carcass ply **1** has a pair of turnup ends **10** within the bead regions **B** that extend laterally outward from the carcass ply **1** and under the bead cores **2** relative to the equatorial plane of the tire, the turnup ends continue under an are turned up wrapping around the elastomeric toruses **3**, wrapping around the elastomeric toruses **3** with the locked end sections of the carcass ply **1** located radially inward of the bead cores **2** and anchored between the bead cores and the carcass plies.

The additional feature of dependent claim 2 is also known from D1, page 9, lines 20,21.

Therefore, the subject-matter of claims 1 and 2 do not meet the requirements of Article 33(2) PCT regarding novelty.

- 2.2 The objects of the present invention, as stated on page 2, relate to the efficiency of the manufacturing process and to the improvement of the bead durability, the latter being achieved by eliminating stresses at the ply ending. In this connection, it seems to be irrelevant to the solution of the problem that the elastomeric toruses are reinforced with fibers.

The subject-matter of dependent claim 3 does not appear to involve an inventive step (Article 33(3) PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/22568

- 2.3 Document EP-A-0 953 435, filed on 15.04.1999 and published on 03.11.1999, i.e. later than the filing date of the present application (30.09.1999), falls within the terms of Rule 33.1(c). Its disclosure is novelty destroying for the subject-matter of claims 4 and 5.

While this document does not belong to the state of the art for the purposes of the IPER, it may be relevant when entering the regional phase, for example before the EPO.

- 2.4 Furthermore, the forming steps listed in claim 4 are conventional in tire manufacturing, and although D1 does not mention the forming process, it appears that there is no other way than that to produce the tire of D1.

The subject-matter of independent claim 4 would not be novel with regard to the state of the art.

The additional feature of claim 5 seems to be a minor modification of the forming drum which would not contribute to solving the problem posed. This claim would not involve an inventive step.

- 2.5 The expansion of the central section of the building drum before addition of other bead components is a practice generally known in the field, as shown for instance in US-A-3 784 426 (D2, cf. Fig. 6D and col. 6, line 49 to col. 7, line 6), document not comprised in the search report but known to the examiner and attached to this report. The subject-matter of claim 6 would not involve an inventive step either.

- 2.6 The subject-matter of independent claim 7 is not supported by the description, as required by Article 6 PCT. The characterizing feature states that "the elastomeric element is disposed **axially inward** of the respective bead core." This disposition has not been mentioned in the description.

If it is a typing error, **inward** instead of **outward**, then the subject-matter of claim 7 would not be novel, as already seen in section 2.1 above. If, on the contrary, it is meant so, then it would contravene Article 41(2) PCT by introducing subject-matter which was not originally disclosed.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/22568

Independent claim 7 would therefore not be allowable. Regarding its dependent claims, the two possibilities considered before would produce different effects:

In the first case, claims 9 and 12-16 would not be new with regard to D1, and claims 8, 10 and 11 would not involve an inventive step (see 2.2 above).

In the second case, claims 8 to 16, as dependent on claim 7, would not comply with Article 41(2) PCT.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al. | | |



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- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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| Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Buergo, J Telephone No. +49 89 2399 8884  |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/22568

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| | No: | Claims | 1,2,7,9,12-16 |
| Inventive step (IS) | Yes: | Claims | |
| | No: | Claims | 3-6,8,10,11 |
| Industrial applicability (IA) | Yes: | Claims | 1-16 |
| | No: | Claims | |

- 2. Citations and explanations
see separate sheet**

V. Reasoned statement

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- 2.4 Furthermore, the forming steps listed in claim 4 are conventional in tire manufacturing, and although D1 does not mention the forming process, it appears that there is no other way than that to produce the tire of D1.

The subject-matter of independent claim 4 would not be novel with regard to the state of the art.

The additional feature of claim 5 seems to be a minor modification of the forming drum which would not contribute to solving the problem posed. This claim would not involve an inventive step.

- 2.5 The expansion of the central section of the building drum before addition of other bead components is a practice generally known in the field, as shown for instance in US-A-3 784 426 (D2, cf. Fig. 6D and col. 6, line 49 to col. 7, line 6), document not comprised in the search report but known to the examiner and attached to this report. The subject-matter of claim 6 would not involve an inventive step either.

- 2.6 The subject-matter of independent claim 7 is not supported by the description, as required by Article 6 PCT. The characterizing feature states that "the elastomeric element is disposed **axially inward** of the respective bead core." This disposition has not been mentioned in the description.

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/22568

Independent claim 7 would therefore not be allowable. Regarding its dependent claims, the two possibilities considered before would produce different effects:

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In the second case, claims 8 to 16, as dependent on claim 7, would not comply with Article 41(2) PCT.

the carcass ply ends.

One approach is to clamp the carcass plies to the bead core. For example, U.S. Pat. No. 4,922,985, ('985) discloses a carcass ply having a main portion that extends between both bead cores of the tire and turnup portions that are anchored around each bead core by a clamping member. According to '985, the clamping member comprises a strip of side-by-side cords of a heat shrinkable material embedded in a suitable elastomeric substance having a permanent thermal shrinkage of at least 2 percent.

Another approach, as disclosed by U.S. Patent 4,185,676, ('676) is to extend the portions of the carcass reinforcement that have been turned upward around the bead rings toward the outside of the tire and embed them in an annular portion of the tire that protrudes from the outer lower portion of the corresponding sidewall. According to '676, a mechanical de-coupling is obtained between the elastic matrices surrounding the carcass reinforcement and its upward turned portions, thus eliminating shearing in these zones.

Another approach, as disclosed by WO95/23073 is, in each bead region of the tire, to wrap a turnup end of the carcass reinforcing ply around a wedge-shaped rubber section which is disposed adjacent and axially (or laterally) inward (towards the equatorial plane) of the bead.

It is continually the goal in the art to simplify the construction and reduce the expense of building locked-bead type tires, yet improve the durability, handling, rolling resistance and other properties of the tires.

OBJECTS OF THE INVENTION

It is an aspect of the present invention to provide a more efficient tire bead manufacturing process as defined in one or more of the appended claims and as such, having the capability of accomplishing one or more of the following subsidiary objects.

An aspect of the present invention is to improve bead durability by eliminating stresses at ply ending.

Another aspect of the present invention is to minimize the shear stresses at the chafer/ply interface in the bead area by eliminating the ply turn-up around the bead.

Yet another aspect of the present invention is to maximize sidewall flexibility in the vicinity of the rim flange to increase the tire load capacity and improve rim-bead seating.

Other aspects and advantages of this invention will become readily apparent as the

2A

invention is better understood by reference to the accompanying drawings and the detailed description that follows.

SUMMARY OF THE INVENTION

The present invention relates to a pneumatic tire, specifically to the carcass ply turnup structure in the bead region and more specifically to a locked bead type of

AMENDED SHEET

Empfängerzeit 5 Nov 1957

What is claimed:

1. A pneumatic tire (230) having a tread (232), a belt structure (234), a pair of sidewalls (236a,236b), a pair of bead regions (238a,238b), one or more plies (242) anchored
5 in each bead region (238a,238b), the pair of bead regions (238a,238b) each including an inextensible annular bead core (244a,244b) and an elastomeric element (246a,246b) disposed adjacent to each bead core (244a,244b), characterized by:

the elastomeric element is disposed axially outwardly from the bead core relative to the equatorial plane of the tire (230); and

10 the carcass ply (242) having a pair of turnup ends (242a,242b) within the bead regions (238a,238b) that extend radially outward from the carcass ply (242) and under the bead cores (244a,244b) relative to the equatorial plane of the tire (230), the turnup ends continue under an are turned up wrapping around the elastomeric elements (246a,246b), wrapping around the elastomeric elements (246a,246b) with the locked end sections
15 (250a,250b) of the carcass ply (242) located radially inward of the bead cores (244a,244b) and anchored between the bead cores (244a,244b) and the carcass plies (242).

2. The tire (230) of claim 1 characterized in that the elastomeric elements (246a,246b) are made of pre-cured rubber.

3. The tire (230) of claim 2 characterized in that the elastomeric elements
20 (246a,246b) are reinforced by fibers of materials including glass, Aramid, steel or polyester.

4. A method of forming a tire (230) on a tire building drum (452), characterized by the steps of:

placing a carcass ply (242) on the drum (452);

placing a pair of elastomeric toruses (246a,246b) over the carcass ply for their
25 incorporation in bead regions (238a,238b) of the tire;

folding turnup ends (242a,242b) of the carcass ply (242) back over the elastomeric toruses (246a,246b) so that anchored end sections (250a,250b) are disposed against the turnup ends (242a,242b);

placing bead cores (244a,244b) inward of and adjacent to the enfolded elastomeric
30 toruses (246a,246b) relative to the center of the building drum (452);

expanding the center section (452c) of the building drum (452) to secure the bead cores (244a,244b) in place; and

inflating the carcass to form the tire.

5. The process of claim 4 including the step of providing the tire building drum (452) with grooves (454a, 454b) to receive the toruses (246a, 246b).

6. The process of claim 4 where the center section (452c) of the building drum (452) is expanded before the addition of chafer and other tire components on the drum.

5 7. A pneumatic tire (230) comprising:

an axis and an equatorial plane;

a tread region (232), two bead regions (238a, 238b), and two sidewalls (236a, 236b);

a reinforcing ply (242) and two bead cores (244a, 244b);

wherein:

10 each sidewall extends generally radially between a respective one of the bead regions and the tread region;

each bead core is disposed in a respective one of the bead regions;

the reinforcing ply extends from one bead core, through a corresponding one of the sidewalls, through the tread region, through the other sidewall, to the other bead core;

15 the reinforcing ply has two turnup ends (242a, 242b) at opposite ends thereof, and the turnup ends wrap at least partially around a respective one of the bead cores;

further comprising two elastomeric elements (246a, 246b);

wherein:

20 each elastomeric element is disposed in a respective one of the bead regions adjacent a respective one of the bead cores;

characterized in that:

the elastomeric element is disposed axially inward of the respective bead core.

8. The tire of claim 7, wherein:

25 the elastomeric elements are in the form of toruses, and each has a circular cross section.

9. The tire of claim 7, wherein:

the elastomeric elements are in the form of toruses, and each has a cross-section selected from the group consisting of square, oblong, triangular, octagonal.

10. The tire of claim 7 characterized in that:

30 the elastomeric elements are made of pre-cured rubber.

11. The tire of claim 7 characterized in that:

the elastomeric elements are reinforced by fibers of materials including glass, Aramid, steel or polyester.

12. The tire of claim 7, wherein:

13

each turnup end extends radially downwardly past the axially inward side of a respective one of the bead cores.

13. The tire of claim 12, wherein:

each turnup end extends axially outwardly under the bead core, then under a
5 respective one elastomeric elements.

14. The tire of claim 13, wherein:

each turnup end wraps radially upward around the axially outward side of the elastomeric element.

15. The tire of claim 14, wherein:

each turnup end extends axially inwardly over the elastomeric element and radially
10 downwardly by the axially inward side of the elastomeric element.

16. The tire of claim 15, wherein:

each turnup end extends axially inwardly under the bead core, between the bead and
itself.

15

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|---|--|---|
| Applicant's or agent's file reference DN1999200PCT | FOR FURTHER ACTION <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small> | |
| International application No. PCT/US 99/ 22568 | International filing date (day/month/year) 30/09/1999 | (Earliest) Priority Date (day/month/year) |
| Applicant THE GOODYEAR TIRE & RUBBER COMPANY et al. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the International search was carried out on the basis of the International application in the language in which it was filed, unless otherwise indicated under this item.

☐ the International search was carried out on the basis of a translation of the International application furnished to this Authority (Rule 23.1(b)).

b. With regard to any nucleotide and/or amino acid sequence disclosed in the International application, the International search was carried out on the basis of the sequence listing:

☐ contained in the International application in written form.

☐ filed together with the International application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the International application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

Pneumatic tyre having locked beads

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

3
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/ 99/22568

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B60C15/05 B29D30/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B60C B29D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X | WO 95 23073 A (MICHELIN MIC COMP GEN DES ETS ;DRIEUX JEAN JACQUES (FR); MUHLHOFF) 31 August 1995 (1995-08-31) page 8, line 12 - line 22; figure 2 page 6, line 24 - line 27; figure 1 page 7, line 26 -page 8, line 11; figure 1 | 1,2 |
| X | US 3 301 303 A (G. L. TRAVERS) 31 January 1967 (1967-01-31) the whole document | 1-4 |
| X | FR 2 773 518 A (MICHELIN & CIE) 16 July 1999 (1999-07-16) page 17, line 4 - line 25; figure 3 page 14, line 1 -page 15, line 10; figure 2 | 1-3 |

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

5 June 2000

Date of mailing of the international search report

13/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Fregosi, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/HQ 99/22568

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | GB 1 000 113 A (DUNLOP RUBBER COMP.) 4 August 1965 (1965-08-04) claims 1,5 page 1, line 75 -page 2, column 1; figure 1 ---- | 1-4 |
| X | FR 1 327 810 A (SOC. FRANC. DU PNEU ENGLEBERT) 6 September 1963 (1963-09-06) the whole document ---- | 1-3 |
| X | FR 2 678 544 A (MICHELIN & CIE) 8 January 1993 (1993-01-08) page 7, line 14 -page 8, line 17; figures 2A-2E ---- | 4,5 |
| E | EP 0 953 435 A (MICHELIN & CIE) 3 November 1999 (1999-11-03) column 7, line 15 -column 9, line 14; figures 7A-7F figures 1,2 ----- | 4-6 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/99/22568

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|---|--|
| WO 9523073 A | 31-08-1995 | FR 2716645 A AT 173205 T AU 678703 B AU 1848795 A BR 9506875 A CA 2183681 A CN 1137777 A DE 69505954 D DE 69505954 T EP 0748287 A ES 2125601 T JP 9509122 T PL 316036 A US 5971047 A | 01-09-1995 15-11-1998 05-06-1997 11-09-1995 09-09-1997 31-08-1995 11-12-1996 17-12-1998 12-05-1999 18-12-1996 01-03-1999 16-09-1997 23-12-1996 26-10-1999 |
| US 3301303 A | 31-01-1967 | BE 647457 A DE 1480937 A FR 1364021 A GB 1046555 A LU 45987 A NL 129169 C NL 6404915 A | 31-08-1964 13-02-1969 14-09-1964 29-06-1964 05-11-1964 |
| FR 2773518 A | 16-07-1999 | WO 9934989 A | 15-07-1999 |
| GB 1000113 A | | FR 1328752 A | 16-12-1963 |
| FR 1327810 A | 06-09-1963 | NONE | |
| FR 2678544 A | 08-01-1993 | NONE | |
| EP 0953435 A | 03-11-1999 | FR 2777826 A CN 1233555 A JP 11320704 A | 29-10-1999 03-11-1999 24-11-1999 |

RAPPORT DE RECHERCHE INTERNATIONALE

Renseignements relatifs aux membres de familles de brevets

Recherche Internationale No

PCT/EP 95/00426

| Document brevet cité au rapport de recherche | Date de publication | Membre(s) de la famille de brevet(s) | Date de publication |
|---|------------------------|---|------------------------|
| EP-A-0077161 | 20-04-83 | AU-B- 548750 | 02-01-86 |
| | | AU-A- 8921582 | 14-04-83 |
| | | CA-A- 1190130 | 09-07-85 |
| | | GB-A, B 2107261 | 27-04-83 |
| | | JP-C- 1710868 | 11-11-92 |
| | | JP-B- 3078281 | 13-12-91 |
| | | JP-A- 58156407 | 17-09-83 |
| | | US-A- 4580610 | 08-04-86 |
| ----- | | | |
| US-A-1919911 | 25-07-33 | AUCUN | |
| ----- | | | |
| FR-A-2211354 | 19-07-74 | BE-A- 808866 | 16-04-74 |
| | | DE-A- 2357240 | 04-07-74 |
| | | GB-A- 1456215 | 24-11-76 |
| | | LU-A- 69050 | 22-02-74 |
| | | NL-A- 7314167 | 24-06-74 |
| ----- | | | |
| US-A-2868258 | 13-01-59 | AUCUN | |
| ----- | | | |
| LU-A-71465 | 11-06-75 | AUCUN | |
| ----- | | | |
| FR-A-1327810 | 06-09-63 | AUCUN | |
| ----- | | | |
| GB-A-767378 | | AUCUN | |
| ----- | | | |

RAPPORT D'ECHEC RECHERCHE INTERNATIONALE

Dem. de Internationale No

PCT/EP 95/00426

C.(suite) DOCUMENTS CONSIDERES COMME PERTINENTS

| Catégorie | Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents | no. des revendications visées |
|-----------|--|-------------------------------|
| A | LU,A,71 465 (DUNLOP) 11 Juin 1975 voir le document en entier --- | 21 |
| A | FR,A,1 327 810 (ENGLEBERT) 6 Septembre 1963 voir page 1, colonne DROITE, alinéa 3 - page 2, colonne GAUCHE, alinéa 2; figures 5,6 --- | 1 |
| A | GB,A,767 378 (PIRELLI) voir page 2, ligne 54 - page 3, ligne 55; figures 8,9 ----- | 1 |

RAPPORT DE RECHERCHE INTERNATIONALE

Form. de Recherche Internationale No

PCT/EP 95/00426

A. CLASSEMENT DE L'OBJET DE LA DEMANDE
CIB 6 B60C15/00 B60C15/02

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (système de classification suivi des symboles de classement)

CIB 6 B60C

Documentation consultée autre que la documentation minimale dans la mesure où ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si cela est réalisable, termes de recherche utilisés)

C. DOCUMENTS CONSIDERES COMME PERTINENTS

| Catégorie * | Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents | no. des revendications visées |
|-------------|--|-------------------------------|
| A | EP,A,0 077 161 (DUNLOP) 20 Avril 1983 voir page 6, ligne 14 - page 10, ligne 20; figures 2,4,7,8 voir page 12, ligne 2 - page 15, ligne 21 --- | 1,2,5,8, 10 |
| A | US,A,1 919 911 (A.SHOEMAKER) 25 Juillet 1933 voir page 2, ligne 122 - page 2, ligne 126; figure 6 --- | 1 |
| A | FR,A,2 211 354 (PIRELLI) 19 Juillet 1974 voir le document en entier --- | 21 |
| A | US,A,2 868 258 (R.POPE POWERS) 13 Janvier 1959 voir le document en entier --- | 21,22 |
| | -/-- | |

☒ Voir la suite du cadre C pour la fin de la liste des documents

☒ Les documents de familles de brevets sont indiqués en annexe

* Catégories spéciales de documents cités:

- "A" document définissant l'état général de la technique, non considéré comme particulièrement pertinent
- "E" document antérieur, mais publié à la date de dépôt international ou après cette date
- "L" document pouvant jeter un doute sur une revendication de priorité ou cité pour déterminer la date de publication d'une autre citation ou pour une raison spéciale (telle qu'indiquée)
- "O" document se référant à une divulgation orale, à un usage, à une exposition ou tous autres moyens
- "P" document publié avant la date de dépôt international, mais postérieurement à la date de priorité revendiquée

- "T" document ultérieur publié après la date de dépôt international ou la date de priorité et n'appartenant pas à l'état de la technique pertinent, mais cité pour comprendre le principe ou la théorie constituant la base de l'invention
- "X" document particulièrement pertinent; l'invention revendiquée ne peut être considérée comme nouvelle ou comme impliquant une activité inventive par rapport au document considéré isolément
- "Y" document particulièrement pertinent; l'invention revendiquée ne peut être considérée comme impliquant une activité inventive lorsque le document est associé à un ou plusieurs autres documents de même nature, cette combinaison étant évidente pour une personne du métier
- "&" document qui fait partie de la même famille de brevets

Date à laquelle la recherche internationale a été effectivement achevée

2 Juin 1995

Date d'expédition du présent rapport de recherche internationale

06.06.95

Nom et adresse postale de l'administration chargée de la recherche internationale

Office Européen des Brevets, P.B. 5818 Patenlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Fonctionnaire autorisé

Schmitt, L

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 95/00426

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---------------------|----------------------------|---------------------|
| EP-A-0077161 | 20-04-83 | AU-B- 548750 | 02-01-86 |
| | | AU-A- 8921582 | 14-04-83 |
| | | CA-A- 1190130 | 09-07-85 |
| | | GB-A, B 2107261 | 27-04-83 |
| | | JP-C- 1710868 | 11-11-92 |
| | | JP-B- 3078281 | 13-12-91 |
| | | JP-A- 58156407 | 17-09-83 |
| | | US-A- 4580610 | 08-04-86 |
| ----- | | | |
| US-A-1919911 | 25-07-33 | NONE | |
| ----- | | | |
| FR-A-2211354 | 19-07-74 | BE-A- 808866 | 16-04-74 |
| | | DE-A- 2357240 | 04-07-74 |
| | | GB-A- 1456215 | 24-11-76 |
| | | LU-A- 69050 | 22-02-74 |
| | | NL-A- 7314167 | 24-06-74 |
| ----- | | | |
| US-A-2868258 | 13-01-59 | NONE | |
| ----- | | | |
| LU-A-71465 | 11-06-75 | NONE | |
| ----- | | | |
| FR-A-1327810 | 06-09-63 | NONE | |
| ----- | | | |
| GB-A-767378 | | NONE | |
| ----- | | | |

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 95/00426

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| A | LU,A,71 465 (DUNLOP) 11 June 1975 see the whole document --- | 21 |
| A | FR,A,1 327 810 (ENGLEBERT) 6 September 1963 see page 1, column DROITE, paragraph 3 - page 2, column GAUCHE, paragraph 2; figures 5,6 --- | 1 |
| A | GB,A,767 378 (PIRELLI) see page 2, line 54 - page 3, line 55; figures 8,9 ----- | 1 |

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

To:

The Goodyear Tire and Rubber Comp.
c/o Robert W. Brown-Dept 823
Attn. COHN, HOWARD M.
1144 East Market Street
Akron, Ohio 44309-3531
UNITED STATES OF AMERICA

Date of mailing
(day/month/year)

13/06/2000

Applicant's or agent's file reference

DN1999200PCT

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/US 99/ 22568

International filing date
(day/month/year)

30/09/1999

Applicant

THE GOODYEAR TIRE & RUBBER COMPANY et al.

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Fascimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Further action(s):** The applicant is reminded of the following:

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Amélie Möller

RECEIVED

JUN 20 2000

ym 5
JUN 21 2000

NOTES FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.